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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,745	06/13/2006	Yutaka Murakami	L9289.06159	8872
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Dickinson Wright PLLC			EXAMINER	
James E. Ledbetter, Esq.			KASSA, ZEWDU A	
International Square			ART UNIT	PAPER NUMBER
1875 Eye Street, N.W., Suite 1200			2611	
Washington, DC 20006				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/579,745	<b>Applicant(s)</b> MURAKAMI ET AL.
	<b>Examiner</b> ZEWDU KASSA	<b>Art Unit</b> 2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 05 June 2009.

2a) This action is FINAL.      2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-34 is/are pending in the application.

4a) Of the above claim(s) 1-13, 16-22 and 27-34 is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 14, 15 and 23-26 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 18 May 2006 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 5/18/2006

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_

**DETAILED ACTION**

1. This office action is in response to communication filled on 06/05/09.

***Election/Restrictions***

2. In response to the election of species requirement, the applicant elects specie 6 (the sixth embodiment). However, applicant's traversed to include embodiment 6-8 and request to examine claims 14-26. The applicant's traversal is on the grounds that embodiment 6-8 are related. This is not found persuasive because applicant has not disclosed these embodiments are obvious variant of one another and the discovery of one embodiment would be obvious over another for examination purpose, only the elected embodiment 6 and claims read on the elected embodiment will be examined ((see MPEP § 806.04 and § 806.04(b)). Among the requested claims 14-26, applicant admitted that claims 16-17 and 22 are related to embodiment 7; claim 21 directed to embodiment 8. For the above discussed reason claims 16-17 and 21-22 will be withdrawn from consideration since they do not read on the elected embodiment 6. In addition, claims 18-20 do not read on

embodiment 6 and withdrawn from consideration. The requirement is made Final.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 14-15 and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerke (US 20030103584 A1) in view of Lee (US 2003/0060173 A1).**

5. As per claim 14, Bjerke teaches a multi-antenna transmission apparatus comprising: a plurality of antennas and (Bjerke, Fig. 2A item 124) an interleaver that interleaves signals transmitted from said antennas in different interleaving patterns (Bjerke, Fig.2A item 214, Para [0067].

Furthermore, it is well known in the art –see Lee US 2003/0060173, Para [0093]).

6. As per claim 15, APA in view of Robert teaches the multi-antenna transmission apparatus according to claim 14 (see claim 14), wherein the interleaving patterns of said interleaver is selected so as to have no correlation between the antennas (Lee, Para [0093] –wherein using different interleaving patterns result in no correlations between different interleaving patterns).

7. As per claim 23, APA in view of Robert teaches the multi-antenna transmission apparatus according to claim 14, wherein said interleaver applies interleaving processing for every  $x$ th symbol to transmission signals transmitted from a first antenna out of said plurality of antennas and applies interleaving processing for every  $y$ th ( $x \neq y$ ) symbol to transmission signals transmitted from a second antenna (Bjerke, Para [0067] "Various interleaving schemes may be used for channel interleaver ... a permutation pattern generated in some manner." – wherein interleaving using permeation will result in mapping symbols in different patterns for example interleaving processing for every  $x$ th symbol or  $Y$  symbol).

8. As per claim 24, APA in view of Robert teaches the multi-antenna transmission apparatus according to claim 23, wherein said interleaver applies interleaving processing in a block size equal to the least common multiple of said x and y (Bjerke, Para [0067] "Various interleaving schemes may be used for channel interleaver ... a permutation pattern generated in some manner." – wherein interleaving using permeation will result in mapping symbols in different patterns for example in a multiple of x and y).

9. As per claim 25, APA in view of Robert teaches the multi-antenna transmission apparatus according to claim 23, wherein said interleaver applies interleaving processing using a prime number for at least one of said x, y (Bjerke, Para [0067] "Various interleaving schemes may be used for channel interleaver ... a permutation pattern generated in some manner." – wherein interleaving using permeation will result in mapping symbols in different patterns for example a prime number for any given order of symbol).

10. **Claims 14-15 and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjerke (US 20030103584 A1) in view of Lee (US 2003/0060173 A1) as applied above in claim 23, and further in view of Masumoto (US 2004/0199846 A1).**

11 As per claim 26, APA in view of Robert teaches the multi-antenna transmission apparatus according to claim 23 (see claim 23).

12. Bjerke in view of Lee does not explicitly teach wherein said interleaver further applies interleaving processing whereby an offset is provided in the frequency direction or in the time direction between block interleaving on the transmission signal transmitted from the first antenna and block interleaving on the transmission signal transmitted from the second antenna. Matsumoto teaches wherein said interleaver further applies interleaving processing whereby an offset is provided in the frequency direction or in the time direction between block interleaving on the transmission signal transmitted from the first antenna and block interleaving on the transmission signal transmitted from the second antenna (Masumoto, Para [0098], Para [0125], [0128]). Thus, it would have been obvious to one having ordinary skill in the art, at the time the invention was made to implement the instant limitation as taught by Masumoto in to Bjerke in view of Lee because Masumoto teaches the benefit of implementing the instant limitation so that the throughput of communication can be improved (Matsumoto, Para [0177], [0125], [0128]).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZEWDU KASSA whose telephone number is (571)270-5253. The examiner can normally be reached on Monday - Friday (7:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571 272 3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

zk

/Chieh M Fan/  
Supervisory Patent Examiner, Art Unit 2611